Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

Please cancel claims 55-58, and add claims 59-62 as follows:

1. (Previously Presented) A method of manufacturing a cutting element comprising:

selecting an ultra hard material having a volume and which is not fully densified;

selecting a substrate having a volume, wherein at least a portion of said substrate has a density that is less than 100% of full density of said at least a portion;

placing the ultra hard material over the substrate; and

sintering the resulting assembly of substrate and ultra-hard material at a sufficient temperature and pressure for full densification and metallurgical joining of the substrate and ultra hard material, wherein the ultra hard material shrinks during sintering, and wherein selecting a substrate further comprises selecting the density in response to the volumes of said substrate and said ultra hard material for providing a desired level of constraint by the substrate to the ultra hard material shrinkage during sintering.

2. (Previously Presented) A method as recited in claim 1 wherein selecting a substrate comprises selecting a substrate having a first portion having said density less than 100% of full density and a second portion that is fully densified prior to sintering.

3. (Previously Presented) A method as recited in claim 2 wherein said substrate first portion extends over the second portion and wherein the ultra hard material layer is placed over the first portion.

4. (Cancelled).

5. (Previously Presented) A method as recited in claim 1 wherein selecting a substrate comprises selecting a substrate comprising an outer portion surrounding an inner portion, wherein the outer portion of the substrate has said density less than 100% of full density and the inner portion of the substrate is fully densified.

6. (Previously Presented) A method as recited in claim 1 wherein selecting a substrate comprises selecting a substrate wherein a first portion of the substrate has a first density and wherein a second portion of the substrate has a second density, wherein the first density is different from the second density.

7. (Previously Presented) A method as recited in claim 1 wherein selecting a substrate comprises selecting a substrate wherein the entire substrate has a density less than 100% of full density of the substrate.

8. (Previously Presented) A method as recited in claim 1 wherein selecting a substrate comprises selecting a substrate wherein said at least a portion has a density in the range of about 70% to about 90% of full density of said portion.

9. (Previously Presented) A method as recited in claim 1 wherein selecting a substrate comprises selecting a substrate wherein said at least a portion has a density in the range of about 40% to about 99% of full density of said portion.

10. (Previously Presented) A method as recited in claim 9 wherein selecting a substrate comprises selecting a substrate wherein said at least a portion has a density in the range of about 75% to about 99% of full density of said portion.

11. (Previously Presented) A method as recited in claim 1 wherein selecting a substrate comprises selecting a substrate wherein the substrate prior to sintering has a porosity of in the range of about 1% to about 30%.

12. (Original) A method as recited in claim 1 further comprising forming a non-uniform face on the substrate material, wherein the ultra hard material is placed over the non-uniform face.

13-24. (Cancelled).

25. (Previously Presented) A method of manufacturing a cutting element comprising:

selecting an ultra hard diamond material which is not fully densified;

selecting a substrate which has been exposed to a thermal condition for producing partial densification, whereby said substrate has a first portion that has a first density less than 100% of full density due to said exposure, and a second portion that has a second density that is different from the first density;

placing the ultra hard material over the substrate; and

processing the resulting assembly of substrate and ultra hard material at a sufficient temperature and pressure for full densification and metallurgical joining of the substrate and ultra hard material, wherein the ultra hard material shrinks during sintering, and wherein selecting a substrate further comprises selecting the densities of the two portions for providing a desired level of constraint by the substrate to the ultra hard material shrinkage during sintering.

26. (Original) A method as recited in claim 25 wherein the first density is in the range of about 70% to about 90% of full density.

27. (Original) A method as recited in claim 25 wherein the first density is in the range of about 40% to about 99% of full density.

28. (Previously Presented) A method as recited in claim 27 wherein the first density is in the range of about 75% to about 99% of full density.

29. (Original) A method as recited in claim 25 wherein the first density is in the range of about 40% to about 70% of full density.

30. (Original) A method as recited in claim 25 wherein the substrate prior to sintering has a porosity of in the range of about 1% to about 30%.

31. (Original) A method as recited in claim 25 further comprising forming a non-uniform face on the substrate material, wherein the ultra hard material is placed over the non-uniform face.

32. (Previously Presented) A method as recited in claim 25 wherein the second density is 100% of full density.

33. (Original) A method as recited in claim 25 wherein first and second densities are selected for controlling the magnitude of the residual stresses generated on the ultra hard material layer during sintering.

34. (Previously Presented) A method as recited in claim 1 wherein the density is selected to minimize the constraint provided by the substrate to the ultra hard material shrinkage during sintering.

35. (Previously Presented) A method as recited in claim 1 wherein the substrate and the ultra hard material shrink during sintering and wherein the density is selected to minimize shrinkage difference between the substrate and the ultra hard material during sintering.

36. (Previously Presented) A method as recited in claim 1 wherein the ultra hard material comprises diamond.

37. (Previously Presented) A method as recited in claim 25 wherein the densities are selected to minimize the constraint provided by the substrate to the ultra hard material during sintering.

38. (Previously Presented) A method as recited in claim 25 wherein the substrate and the ultra hard material shrink during sintering and wherein the densities are selected to minimize shrinkage difference between the substrate and the ultra hard material during sintering.

39. (Previously Presented) A method as recited in claim 25 wherein the ultra hard material comprises diamond.

40-49. (Cancelled)

50. (Previously Presented) A method as recited in claim 1 wherein selecting a substrate comprises selecting a substrate which entire substrate has been subjected to a thermal condition for producing said substrate to have at least a portion of the substrate have a density that is less than 100%.

51. (Previously Presented) A method as recited in claim 25 wherein the substrate has a volume and wherein the ultra hard material layer has a volume and wherein the

densities of the two portions are selected in response to the volume of said substrate and the volume of said ultra hard material layer.

52. (Previously Presented) A method of manufacturing a cutting element comprising:

selecting an ultra hard material having a volume and which is not fully densified;

selecting a substrate having a volume, a first portion that has a first density less than 100% of full density, and a second portion that has a second density that is different from the first density;

placing the ultra hard material over the substrate; and

processing the resulting assembly of substrate and ultra hard material at a sufficient temperature and pressure for full densification and metallurgical joining of the substrate and ultra hard material, wherein the ultra hard material shrinks during sintering, and wherein selecting a substrate further comprises selecting the densities of the two portions in response to the volume of the substrate and the volume of the ultra hard material for providing a desired level of constraint by the substrate to the ultra hard material shrinkage during sintering.

53. (Previously Presented) A method of manufacturing a cutting element comprising:

selecting an ultra hard material solid having a volume;

selecting a substrate having a volume, wherein at least a portion of said substrate has a density that is less than 100% of full density of said at least a portion;

placing the ultra hard material solid over the substrate; and

sintering the resulting assembly of substrate and ultra-hard material solid at a sufficient temperature and pressure for full densification of the substrate and joining of ultra hard material solid to the substrate, wherein selecting a substrate further comprises selecting the density in response to the volumes of said substrate and said ultra hard material solid for

providing a desired level of constraint by the substrate to the ultra hard material solid during sintering.

54. (Previously Presented) The method as recited in claim 53 wherein the ultra hard material solid is porous.

55-58. (Cancelled).

59. (New) A method is recited in claim 1 wherein selecting an ultra hard material comprises selecting an ultra hard material porous solid.

60. (New) A method is recited in claim 25 wherein selecting an ultra hard diamond material comprises selecting an ultra hard diamond porous solid material.

61. (New) A method is recited in claim 52 wherein selecting an ultra hard material comprises selecting an ultra hard porous solid material.

62. (New) A method is recited in claim 53 wherein selecting ultra hard material solid comprises selecting ultra hard material porous solid.